

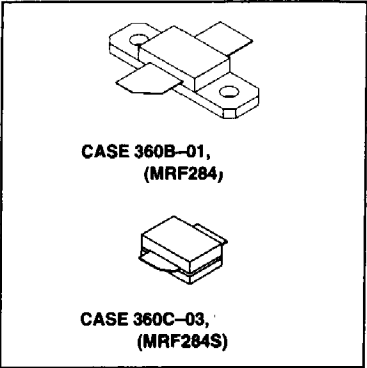
Advance Information
The RF Sub-Micron MOSFET Line
RF Power Field Effect Transistors
N-Channel Enhancement-Mode Lateral MOSFETs

Designed for PCN and PCS base station applications at frequencies from 1000 to 2600 MHz. Suitable for FM, TDMA, CDMA, and multicarrier amplifier applications. To be used in class A and class AB for PCN-PCS/cellular radio and wireless local loop.

- Specified Two-Tone Performance @ 2000 MHz, 26 Volts
 Output Power = 30 Watts (PEP)
 Power Gain = 10 dB
 Efficiency = 30%
 Intermodulation Distortion = -30 dBc
- Typical Single-Tone Performance at 2000 MHz, 26 Volts
 Output Power = 30 Watts (CW)
 Power Gain = 9 dB
 Efficiency = 45%
- Characterized with Series Equivalent Large-Signal Impedance Parameters
- S-Parameter Characterization at High Bias Levels
- Excellent Thermal Stability
- Capable of Handling 10:1 VSWR, @ 26 Vdc, 2000 MHz, 30 Watts (CW) Output Power
- Gold Metallization for Improved Reliability



**30 W, 2000 MHz, 26 V
 LATERAL N-CHANNEL
 BROADBAND
 RF POWER MOSFETs**



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	65	Vdc
Gate-Source Voltage	V _{GS}	±20	Vdc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	87.5 0.5	Watts W/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C
Operating Junction Temperature	T _J	200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	2.0	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-Source Breakdown Voltage (V _{GS} = 0, I _D = 10 μA _{dc})	V _{(BR)DSS}	65	—	—	Vdc
Zero Gate Voltage Drain Current (V _{DS} = 20 Vdc, V _{GS} = 0)	I _{DSS}	—	—	1.0	μA _{dc}
Gate-Source Leakage Current (V _{GS} = 20 Vdc, V _{DS} = 0)	I _{GSS}	—	—	10	μA _{dc}

NOTE - CAUTION - MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.



NJ Semi-Cond reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Cond is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Cond assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Cond encourages customers to verify that datasheets are current before placing orders.

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
Gate Threshold Voltage ($V_{DS} = 10\text{ Vdc}$, $I_D = 150\ \mu\text{Adc}$)	$V_{GS(th)}$	2.0	3.0	4.0	Vdc
Gate Quiescent Voltage ($V_{DS} = 26\text{ Vdc}$, $I_D = 200\ \text{mAdc}$)	$V_{GS(q)}$	3.0	4.0	5.0	Vdc
Drain-Source On-Voltage ($V_{GS} = 10\text{ Vdc}$, $I_D = 1.0\ \text{Adc}$)	$V_{DS(on)}$	—	0.3	0.6	Vdc
Forward Transconductance ($V_{DS} = 10\text{ Vdc}$, $I_D = 1.0\ \text{Adc}$)	g_{fs}	1.0	1.5	—	S
DYNAMIC CHARACTERISTICS					
Input Capacitance ($V_{DS} = 26\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\ \text{MHz}$)	C_{iss}	—	37	—	pF
Output Capacitance ($V_{DS} = 26\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\ \text{MHz}$)	C_{oss}	—	23	—	pF
Reverse Transfer Capacitance ($V_{DS} = 26\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\ \text{MHz}$)	C_{rss}	—	1.2	—	pF
FUNCTIONAL TESTS (in Motorola Test Fixture)					
Common-Source Power Gain ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$, $f_2 = 2000.1\ \text{MHz}$)	G_{ps}	9	10.5	—	dB
Drain Efficiency ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$, $f_2 = 2000.1\ \text{MHz}$)	η	30	33	—	%
Intermodulation Distortion ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$, $f_2 = 2000.1\ \text{MHz}$)	I_{MD}	—	-33	-29	dBc
Input Return Loss ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$, $f_2 = 2000.1\ \text{MHz}$)	I_{RL}	9	24	—	dB
Common-Source Amplifier Power Gain ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W PEP}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 1930.0\ \text{MHz}$, $f_2 = 1930.1\ \text{MHz}$)	G_{ps}	9	10.7	—	dB
Drain Efficiency ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W PEP}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 1930.0\ \text{MHz}$, $f_2 = 1930.1\ \text{MHz}$)	η	—	33	—	%
Intermodulation Distortion ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W PEP}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 1930.0\ \text{MHz}$, $f_2 = 1930.1\ \text{MHz}$)	I_{MD}	—	-33	—	dBc
Input Return Loss ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W PEP}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 1930.0\ \text{MHz}$, $f_2 = 1930.1\ \text{MHz}$)	I_{RL}	9	15	—	dB
Common-Source Amplifier Power Gain ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W CW}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$)	G_{ps}	8.5	10.7	—	dB
Drain Efficiency ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W CW}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$)	η	35	—	—	%
Output Mismatch Stress ($V_{DD} = 26\text{ Vdc}$, $P_{out} = 30\ \text{W CW}$, $I_{DQ} = 200\ \text{mA}$, $f_1 = 2000.0\ \text{MHz}$, $V_{SWR} = 10:1$, at All Phase Angles)	Ψ	No Degradation In Output Power			

